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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,627	07/01/2003	Iwao Yoshida	023971-0288	4984
22428	7590	05/19/2005	EXAMINER	
FOLEY AND LARDNER SUITE 500 3000 K STREET NW WASHINGTON, DC 20007			TRAN, DIEM T	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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## Office Action Summary

Application No.

10/609,627

Applicant(s)

YOSHIDA, IWAQ

Examiner

Diem Tran

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9, 17-19, 23-27, 30, 34, 35 is/are rejected.
- 7) ☐ Claim(s) 6-8, 10-16, 20-22, 28, 29 and 31-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

-This office action is in response to the amendment filed on 2/17/05. In this amendment, claims 1, 4, 6-9, 13-14, 17, 19-21, 24-26, 33-35 have been amended. Overall, claims 1-35 are pending in this application.

### *Drawings*

The drawings are objected because the formal drawing sheet of Figures 11A-11G (in which the drawing Figure 11D has been amended) was not submitted as claimed.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***Claims 1-3, 27, 30, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Pfalzgraf (US Patent 6,722,125).***

Regarding claims 1, 27, 30, 34, Pfalzgraf discloses an exhaust purification apparatus for an internal combustion engine, comprising:

an exhaust gas purification catalyst disposed in an exhaust passage of the engine; and a controller that executes a poisoning release control of the exhaust gas purification catalyst when a predetermined condition is established (see col. 4, lines 21-35), the poisoning release control

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including a normal mode and an exhaust gas composition mode before the normal mode, a manipulation parameter of the engine related to an exhaust gas composition being manipulated in such a manner that a hydrogen concentration in the exhaust gas flowing into the exhaust purification apparatus in the exhaust gas composition mode is higher than (i.e. the lambda value is richer than) that in the normal mode (the lambda value is increased i.e. less rich than before when the temperature upstream of the NOx storage catalyst is reached to 800°C) (see col. 4, lines 49-67, col. 5, lines 1-6).

Regarding claims 2, 3, Pfalzgraf further discloses that the mode of the poisoning release control is switched from the exhaust gas composition mode to the normal mode (i.e. changing the air fuel ratio is increased in compared to the first mode) when a temperature of the exhaust purification catalyst becomes high and is in excess of a first predetermined value (see col. 5, lines 1-6).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pfalzgraf (US Patent 6,722,125) in view of Yoichi et al. (JP 2001-271685).***

Pfalzgraf discloses all the claimed limitations as discussed in claim 1 above, however, fails to disclose during the poisoning release control, a fuel injection through a fuel injection

valve used in a direct fuel injection is split into the injection under a suction stroke and that under a compression stroke. Yoichi teaches that it is conventional in the art, to utilize splitting a fuel injection through a fuel injection valve into the injection under a suction stroke and that under a compression stroke during the poisoning release control (see abstract).

It would have been obvious to one having ordinary skill in the art, to have utilized the teaching of Yoichi in the apparatus of Pfalzgraf, since the use thereof would have increased the temperature of the exhaust gas to recover from sulfur poisoning of a NOx absorber.

***Claim 4, 9, 17-19, 23-26, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfalzgraf (US Patent 6,722,125) in view of Isobe (U.S. Patent 5,974,792).***

Regarding claims 4, 9, Pfalzgraf discloses all the claimed limitations as discussed in claims 1, 5 above, Pfalzgraf further discloses that the hydrogen concentration in the exhaust gas in the exhaust gas composition mode is higher than (i.e richer than) in the normal mode (see col. 4, lines 49-67, col. 5, lines 1-6); however, fails to disclose that an ignition timing in the exhaust composition mode is set toward an advance angle direction more than that in the normal mode.

As shown in Figure 1, Isobe teaches a control apparatus for rapidly warming a catalyst, the control apparatus adjusts the fuel injection amount to a rich amount and further retards the ignition timing. As indicated on lines 4-8 of column 20, an ignition timing of the rich cylinders is retarded to suppress engine torque fluctuations. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to set the ignition timing toward a more retardation direction of richer cylinders in the apparatus of Pfalzgraf as taught by Isobe, since the use thereof would have resulted in smooth engine operation.

Regarding claims 17, 19, 23-26, 35, Pfalzgraf discloses an exhaust purification apparatus for an internal combustion engine comprising:

an exhaust gas purification catalyst disposed in an exhaust passage of the engine; and a controller that executes a poisoning release control of the exhaust gas purification catalyst when a predetermined condition is established (see col. 4, lines 21-35), the poisoning release control including a normal mode and an exhaust gas composition mode before the normal mode (see col. 4, lines 49-67, col. 5, lines 1-6), however, fails to disclose an ignition timing in the exhaust gas composition mode being set toward a more advance angle direction than that in the normal mode.

As shown in Figure 1, Isobe teaches a control apparatus for rapidly warming a catalyst, the control apparatus adjusts the fuel injection amount to a rich amount and further retards the ignition timing. As indicated on lines 4-8 of column 20, an ignition timing of the rich cylinders is retarded to suppress engine torque fluctuations. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to set the ignition timing toward a more retardation direction of richer cylinders in the apparatus of Pfalzgraf as taught by Isobe, since the use thereof would have resulted in smooth engine operation.

Regarding claim 18, Pfalzgraf further discloses that the mode is switched from the exhaust gas composition mode to the normal mode, when a temperature of the catalyst becomes high and is in excess of a first predetermined value (see col. 5, lines 1-6).

*Allowable Subject Matter*

Claims 6-8, 10-16, 20-22, 28, 29, 31-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

*Response to Arguments*

Applicant's arguments filed on 2/17/05 have been fully considered but they are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

*Conclusion*


Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:30 a.m.- 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).

DT  
May 9, 2005

Diem Tran  
Patent Examiner  
Art unit 3748

  
THOMAS DENION  
SUPERVISORY PATENT EXAMINER  
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